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ABSTRACT

This article reviews research and literature to identify the most appropriate and effective work on promoting the acquisition of English by limited-English-speaking students via the use of computers. Fields covered in the review are linguistics, culture, psycholinguistics, and sociolinguistics. First, studies on when a child best learns a second language are surveyed. Special attention is given to questions about which affective and motivation strategies yield the best student response, the cultural content of language programs, and the relationship of reading and writing skills. Next, literature on computer-assisted-instruction (CAI) is reviewed, and the conclusion reached that, although an inadequate amount of research has been done on the cognitive effects of computer use, there is promising evidence that academic achievement can be improved. Finally, implications for the development of English as a Second Language/CAI software are considered. Multiple criteria are presented, including primary goals (such as communicative competence and functional literacy) and the need for integrating the effective, cognitive, and psychomotor aspects of learning. (KH)

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SELECTING COMPUTER SOFTWARE FOR LIMITED ENGLISH SPEAKERS

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IDRA INTERCULTURAL DEVELOPMENT RESEARCH ASSOCIATION newsletter

SEPTEMBER 1984

SELECTING COMPUTER SOFTWARE FOR LIMITED ENGLISH SPEAKERS

by Bertha Pérez, Ph.D.

A review of literature was conducted to identify the most appropriate and effective work on promoting the acquisition of English by limited-English-speaking students via the use of computers. The research and literature reviewed were in the areas of linguistics, culture, psycholinguistics, and sociolinguistics. The review of the literature was guided by the following set of questions.

1. What language competency level would most benefit from an English-as-a-second language/computer-assisted instruction (ESL/CAI) program? What age group should be the target of an ESL/CAI program?
2. What affective and motivation strategies yield the best student response?
3. What cultural content would be most appropriate?
4. What reading and writing levels are most appropriate?

Review of English-as-a-second language (ESL) Literature

Language Levels/Age Groups The question of when the child best learns a second language has been one of the most debated issues in second language instruction and is central to the proposed project. According to Lindfors (1980) children learn a second language in ways that are very similar to native language acquisition. Although first language acquisition is extremely rapid at first, it takes the child four-six years to master the main part of his eventual full native competence. Wong-Fillmore (1982) estimates that second language acquisition sufficient to perform in school takes four to six years, while Cummins (1981) suggests five to eight years. These estimates are similar to first language learning. While the processes that different students use are similar, there are many individual differences in the rate of learning (Wong-Fillmore, 1976). The research implies that older children (12-15 years of age) are significantly faster in the initial stages of second language learning than younger children (4-10 years of age). Snow and Hoefnagle-Hohle (1978) report teenagers outperformed young children in both initial spontaneous production and rates of improvement. One reason older students may do better than young children may be their more advanced conversational strategies. Fillmore (1976), and Scarcella and Higa (1984) provide different perspectives on how people learn to "manage" conversation. By manipulating turn-taking rules, conversational feedback conventions, and memorized patterns and routines, older students control the flow of information to make it more comprehensible. They can slow down or request clarification from a conversational partner; they are already relatively comfortable with the sociolinguistic demands of communication. Teenagers can exploit the social conventions of adult speech, while small children have not yet learned them. Krashen (1981a) proposes two ideas based on a Piagetian theory to account for age-attainment differences. He suggests that older speakers have developed better short-term memory and are thus better conversational partners, and that they have reached the stage which allows older speakers to draw on the abstract structures of their first language and apply them by analogy to the new language.

The evidence presented by Cummins et al (1981), that children are more efficient second language learners when their first language proficiency is well in place, makes perfect sense in light of the age data presented above. In the course of developing their first language, children gain skills that can be applied to the second language. When the second language is introduced too early, or when the second language supplants the first in the early years, the child is at a relative disadvantage.

Affective and Motivation Strategies In addition to age, personality characteristics, attitudes towards self, and feelings about learning languages have a powerful effect upon the rate at which the student learns a language, as well as on the ultimate level of proficiency. Gardner and Lambert (1959) studied the psychological factors of language learning and developed a measure to assess student motivation. They found that students who "desire to be like valued members of the community that speak the second language" (in Krashen, 1981a) were most motivated to learn the new language. Stevick (1979) also found that students with a positive attitude towards the second language group were more willing to let their defenses down, thus allowing more language input and accelerated language development.

Dulay and Burt (1977) have approached affect in language learning from a slightly different perspective. They observe that

cont. pg. 2

LD 0238 63

ESL/CAI Computer Software

cont. from pg. 1

some learners are "open" to the language acquisition process. These students have a low level of anxiety about making errors or failing to sound natural. They are interested in communicating. Dulay and Burt describe this type of learner as having a low affective filter. Krashen (1981a) compares the affective filter to "having a mental block." Students who have such a block may understand what they hear, but it will have little lasting effect on their language ability (Stevick, 1976). Krashen (1981a) has pointed out that persons with a low filter will have more language-learning opportunities because they will appear more open to others.

Lowered inhibition seems to be a key to minimizing the effect of an affective filter. Schumann (1975) notes that this can be achieved by increased empathy for the target-language speakers, leading to increased personal identification.

Given the difficulty of measuring complex psychological variables such an integrative motivation or empathy, it is noteworthy that so much of the literature on language learning and affect is in agreement. It seems clear that positive self-image and good social skills facilitate the growth of language.

Cultural Content Learning a language requires a cultural or ethnic-based set of referents. A second language program should provide a cultural context that is compatible with the student's culture without being stereotypic. When the content is familiar to the learner quick identification with the classroom environment is likely to occur. This cultural context approach lowers the affective filter for the student. It also provides opportunities for comparing and contrasting the cultures reflected in the first and second languages. Gonzales (1974) and others have identified the following elements that should be included in a culturally responsive curriculum: (a) history and heritage of the child, (b) contributions of the ethnic group in the community and in the larger national and international communities, (c) opportunity of choice in the acquisition and expression of cultural values and practices, (d) history and culture of other minorities, (e) information on how race, environment, ethnicity and social class shape behavior, and (f) opportunity to evaluate concepts of cultural diversity and cultural pluralism.

Reading and Writing Many societal perceptions affect the language minority student. The degree to which one can communicate orally and in print, and the degree to which one can understand oral and written communication determines one's educational options, or lack thereof. From succeeding in school to having a wide variety of choices in the job market, oracy and literacy are crucial sociological determiners for any person. Mobility is expanded to the degree that an individual has literacy beyond basic functions. The fact that we are becoming an information-oriented and high technology society has broad implications for language minority students. As information continues to expand in quantum leaps and as information gets more complex, it becomes more critical that there be truly universal literacy.

Goodman (1979) describes the reading process as essentially the same process across languages. He speaks about universals of various language systems (phonological, grammatical, semantic) and about universal processes of predicting, hypothesizing, and confirming our revised hypotheses. He found that children who speak almost no English can read English environmental print. In a later study (Goodman and Goodman, 1980) children of limited English-speaking ability were able to demonstrate understanding of material they read in English if they were allowed to express their understanding in their native language. A number of researchers (Edelsky, 1981; Hudelson, 1981; Goodman, Goodman and Flores, 1980) have also found that students who are good readers in their first language make a more successful transfer into reading the second language.

Studies on writing and composing are yielding similar results. Edelsky (1981) observed that children who have done a lot of original writing in their native language apply these abilities to second language composing. Students can do a lot of original writing in their second language before they have complete control over the phonology, morphology, syntax and orthography of the second language (Edelsky, 1981; Station, 1981). Goodman (1980) concludes that composing and reading are interrelated processes and one helps the other.

Review of Computer-assisted-instruction (CAI) Literature

A review of selected research and literature on available courseware and use of computers by minority students was also conducted. Although an inadequate amount of research has been done on the cognitive effects of computer use, there is promising evidence that academic achievement can be improved. Malone (1982) studied K-12 students using computer games and concluded that games offered challenges and enhanced curiosity about knowledge structures in problem solving. He noted, as have many others, that boys and girls were not motivated by the same types of fantasy subjects.

cont. pg. 3

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ESL/CAI Computer Software

cont. from pg. 2

Kulik, Bangert, and Williams (1982) in their review of fifty-one experimental studies (grades 6-12) found that CAI raised student scores on final exams from the 50th to the 63rd percentile. The amount of time taken to learn the material by the experimental group was less than for the control group. In addition, students reported favorable attitudes toward the use of computers. Vinsonhaler and Bass (1972) concluded that there was a substantial advantage of CAI over traditional drill and practice in their summary of three hundred experiments with 10,000 students. Of particular interest was the finding that students with low reading skills and small vocabularies were more effective learners with pictorial presentations of material than printed matter.

Access to computers in public education is seen as a significant opportunity for allowing minorities to gain entry into the expanding areas of the economy that require computer literacy and related skills. In spite of the attention given to the potential benefits of CAI for special target populations, the availability of computer software for the handicapped (Lindsey, 1981) and the limited English proficient (Cardenas, 1983) is almost negligible and the quality of the existent software leaves much to be desired. For example, a recent IDRA analysis of the Texas Education Computer Cooperative (TECC) software survey concluded that:

- There is a lack of software in the area of language/reading which is an area of high concern in meeting the linguistic and eduational needs of the LEP population.
- The lower grades, where the greatest number of LEP students are concentrated have limited access to courseware in English and there is no native language courseware.
- The existing courseware, which is primarily drill-and-practice and tutorials, does not help the elementary school child in higher level skills development.
- The existing courseware needs improvement and is not flexible enough to be adapted for the teaching of LEP students.

Home and DeeBoulay (1983) found that students become frustrated with drill and practice programs and begin to respond randomly. A related philosophical criticism of drill-and-practice programs is that they exaggerate an already greatly emphasized learning of facts. Facts, after all, are more easily translated into computer programs than are conceptual ideas. The student, according to this view, is too often called upon to provide the "right" answer to someone else's question, while little emphasis is placed on encouraging students to ask questions, to organize their ideas, to apply their understanding to new situations, to work productively with peers, to accomplish planned goals, and to learn how to improve their learning skills (Garson, 1980). Drill-and-practice on the computer, therefore, can become one more boring tool over which students have little control.

Assessments of tutorial programs yield similar results. Uttal (1969) questions whether the simplest tutorial programs, combining a presentation of facts, multiple choice questions, and some response-contingent branching, provide useful instructional advantages. Uttal describes the limitations as a lack of ingenuity in the scheme used to represent concepts.

Borg (1982) states that existing computer-based materials should not be considered as "models to emulate," but simply as the current state of the art from which much more exciting things can be done. He cautions against the notion of a "right" way to use computers in education stating, ". . . we need a diversity of types of usage, and we should think of this diversity in pedagogical terms, rather than in computer terms." (Borg), 1982, pg. 5)

cont pg. 6

COMPUTER SEMINAR ANNOUNCED

IDRA announces a new program, Bilingual Communications Computer Systems, funded by Title VII to increase computer utilization in bilingual education. As part of this program's activities, IDRA will hold a preconference workshop at the annual meeting of the Texas Association for Bilingual Education to be held at the Houston Hyatt Regency Hotel.

The preconference workshop will be conducted by Dr. Bertha Pérez on October 11, 1984. The session will give participants an opportunity to:

1) review existing policies and practices in the acquisition and utilization of computers for educating limited-English-proficient (LEP) students,
2) acquire the most current information on available software for LEP students,
3) develop skills in critical review and evaluation of software, and
4) share information about on-going bilingual software development projects.

The session will also provide a forum for communication networking on computer utilization among bilingual programs in the state.

Attendance will be targeted for bilingual program project directors. Participation will be limited to thirty individuals.

For more information, please contact:

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targeted at the elementary school level and developed

ESL/CAI Computer Software

cont. from pg. 3

Implications for ESL/CAI Software Development

Based on the review of literature, the review of existing courseware, and consultation with bilingual experts, the author concludes that computer-assisted ESL programs must meet multiple criteria. The lessons must be integrated into a natural language learning environment that includes listening, speaking, reading, and composing. The main goal of the language program is the use of language for specific purposes, functions, and notions. Rather than isolating reading skills in drill and practice exercises, the lessons should allow for the use and practice of the second language in a multisensory, holistic manner. The student should have active, creative interaction with the computer, with peers and adults. This will enhance the language acquisition environment while increasing the amount of immediate feedback to the individual learner.

Current research stresses motivation and learner interest, so the lessons must be student centered, highly motivating and draw substantially on the background and experiences of the student. The language should be practiced in recognizable settings. Drills, repetition, and reinforcement should be in a natural language context. Feedback should be both oral and in print, responding first to the content and meaning of the student's message and only secondarily and selectively to issues of form. Given the limitations in the availability of oral components in CAI, the lessons must allow for creative construction.

CAI based on print communication can be useful for ESL instruction if it is appropriate to the proficiency level of the student, but it cannot replace and must parallel extensive and intensive oral language development. Composition can begin simultaneously with oral language development if the lessons

cont. pg. 8

ESL/CAI Computer Software

cont. from pg. 6

allow for individual variance and the objectives are appropriate for the student. The computer should provide instant non-threatening feedback, continuously assess and document student progress, consistently channel the student to appropriate lessons with teacher control, and keep challenging the student without increasing the frustration level. It cannot be assumed that oral proficiency in a first language implies literacy so that printed instructions in the native language are useful only for those students that are functionally literate. Ultimately, the lessons should be inherently motivating for oral and written communication and, therefore, must integrate the affective, cognitive, and psychomotor aspects of learning. Primary goals must be communicative competence and functional literacy, but these must lead to concurrent acquisition and manipulation of information related to academic concerns.

Editor's note: References cited in this article are available upon request.

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